GUJARAT TECHNOLOGICAL UNIVERSITY

ENVIRONMENTAL SCIENCE AND TECHNOLOGY (35)
ENVIRONMENTAL MANAGEMENT - III
SUBJECT CODE: 2183509
B.E. 8TH SEMESTER

Type of course: Environmental Science & Technology

Prerequisite: Information of Air Pollutants, Environmental Impact, Ground water hydrology etc., along with some basic knowledge of Environmental pollution control.

Rationale: This subject is intended to make students aware about the methods for monitoring and control of groundwater and air emissions. Students will also be aware about the Environmental Impact Assessment techniques and Safety management procedures followed in the industries.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks			Practical Marks			
				ESE (E)	PA (M)		ESE (V)		PA (I)	
					PA	ALA	ESE	OEP		
4	1	0	5	70	20	10	30	0	20	150

Content:

Sr. No.	Content	Total Hrs	% Weightage
1.	**Environmental Impact Assessment**: Introduction, Origin of Environmental Impact Assessment, Project Screening of EIA, Scope Studies of EIA, Preparation of EIS, Review of EIS, Multidisciplinary team management, Case study, Public participation in environmental in environmental decision making process, EIA Notifications 2006.	09	25
2.	**Hazard and Risk Identification**: Hazard, Risk detection techniques, Hazard Analysis (HAZAN), Hazard and operability studies (HAZOP), Fault tree Analysis, Event tree analysis, Onsite emergency plans, Offsite emergency plans. Need of PPE, Factors of selection of PPE, Non respiratory equipments and respiratory equipments.	09	25
3.	**Ground water monitoring:** Occurrence of ground water, factors governing the occurrence of groundwater, zones of groundwater, movement of groundwater and its velocity, coefficient of permeability, drainage of groundwater, ground water yield, aquifer and types, important terms related to ground water. Remote sensing	09	25
4.	**Emission control and trading :** Continuous monitoring emission systems, Carbon footprint, Climate change,New International developments, Emission trading, Green Building	09	25

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
23	**20**	**23**	**20**	**14**	**-**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Water supply engineering, S.K Garg, Khanna Publishers.
2. Environmental pollution control engineering, C.S Rao, new age international publishers.
3. Fundamental of industrial safety and health by Dr. K.U Mistry.
4. Environmental Impact Assessment by Larry Canter; McGraw hill publications.
5. Environmental Engineering: Gerard Kiely, McGraw hill international edition.

Course Outcome: After learning this course the students would have:

1. Proper understanding about monitoring and control on usage of ground water.
2. Information about various gaseous emissions sampling procedures and control techniques.
3. Knowledge about the major risks and hazards prevailing in the industries.
4. Information about environmental impact assessment techniques.
5. Knowledge about EIA notifications 2006 and its amendments.

List of Tutorials:

1. Question based on detailed content of EIA
2. Questions based on EIA notifications
3. Understanding of a Case Study on EIA
4. Case studies on Environmental Audit
5. Questions based on Hazard and risk identification, assessment and control technique.
6. Question based on monitoring and control of ground water
7. Questions based on emission and control of air pollutants

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.